

CLAIMS

1. A multiple ink jet printing system having a plurality of substantially parallel rows of dye nozzles, comprising:
 - a plurality of rows of dark dye nozzles, each row of dark dye nozzles coupled to a supply of dark dye ink;
 - a plurality of rows of light dye nozzles, each row of light dye nozzles coupled to a supply of light dye ink;
 - wherein each of the rows of dark dye nozzles and light dye nozzles are arranged substantially parallel to each other, and wherein at least one row of dark dye nozzles is separated from the next row of dark dye nozzles by a row of light dye nozzles.
2. The printing system of claim 1, comprising at least four rows of dark dye nozzles, wherein each row of dark dye nozzles is coupled to a supply of dark dye ink of a different color, the supplies of dark dye ink including the colors of black, cyan, magenta, and yellow.
3. The printing system of claim 2, comprising at least two rows of light dye nozzles, wherein each row of light dye nozzles is coupled to a supply of light dye ink of a different color, the supplies of light dye ink, including the colors of light cyan and light magenta.
4. The printing system of claim 2, comprising at least three rows of light dye nozzles, wherein each row of light dye nozzles is coupled to a supply of light dye ink of a different color, the supplies of light dye ink including the colors of light cyan, light magenta, and light yellow.
5. The printing system of claim 2, comprising at least three rows of light dye nozzles, wherein each row of light dye nozzles is coupled to a supply of light dye ink of a different color, the supplies of light dye ink including the colors of light cyan, light magenta, and light black.

10056292.012402

6. The printing system of claim 2, comprising at least four rows of light dye nozzles, wherein each row of light dye nozzles is coupled to a supply of light dye ink of a different color, the supplies of light dye ink including the colors of light cyan, light magenta, light yellow and light black.
7. The printing system of claim 1, wherein the rows of dark dye nozzles are separated from each other by rows of light dye nozzles.
8. The printing system of claim 1, wherein the rows of dark dye nozzles with the exception of any row of yellow dark dye nozzles are separated from each other by rows of light dye nozzles and yellow dye nozzles.
9. The printing system of claim 1, wherein at least one row of dye nozzles is coupled to a supply of black ink and is located at one end of the plurality of rows of dye nozzles.
10. The printing system of claim 9, wherein the at least one row of dye nozzles coupled to a supply of black ink is followed by a row of yellow dye nozzles which is followed by rows of the remaining nozzles arranged in alternating rows of light and dark dye nozzles, with a row of light dye nozzles adjacent the row of yellow dye nozzles.
11. The printing system of claim 9, wherein a row of yellow die nozzles is located at the other end of the plurality of rows of dye nozzles, and wherein the remaining rows of dye nozzles are arranged between the black and yellow nozzles rows of dye nozzles in alternating rows of light and dark dye nozzles starting with a row of light dye nozzles adjacent the at least one row of dye nozzles coupled to a supply of black ink.

2025-01-24 10:56:29

12. The printing system of claim 8, wherein the at least one row of dye nozzles coupled to a supply of black ink is coupled to a supply of dark black ink and is followed by a row of dye nozzles coupled to a supply of light black ink, wherein only one row of dye nozzles is coupled to a supply of yellow ink, and wherein dark and light ink rows alternate, with the row of dye nozzles coupled to a supply of yellow ink being treated as a dark ink row in this alternation pattern.

13. The printing system of claim 1, wherein a combination of light dye ink and dark dye ink is used during low speed printing and only dark dye ink is used during high speed printing.

14. A six ink jet printing system, comprising:

- a plurality of rows of dark dye nozzles, each row of dark dye nozzles coupled to a supply of ink and having a color selected from the group consisting of cyan and magenta;

- a row of yellow dye nozzles;

- one or more rows of adjacent black dye nozzles coupled to a supply of black ink; and

- a plurality of rows of light dye nozzles, each row of light dye nozzles coupled to a supply of ink and having a color selected from cyan, magenta, yellow, and black;

- wherein each of the rows of the yellow dye nozzles, dark dye nozzles, light dye nozzles, and black dye nozzles are arranged substantially parallel to each other, and wherein each row of nozzles adjacent to a row of dark dye nozzles and the one or more rows of black dye nozzles is a row of light dye nozzles or the row of yellow dye nozzles.

15. The system of claim 14, wherein a first row of light dye nozzles, is coupled to a supply of ink having a light cyan color, and a second row of light dye nozzles, is coupled to a supply of ink having a light magenta color.

16. The system of claim 14, wherein the row of yellow dye nozzles is arranged at a position directly between one row of light dye nozzles and the one or more rows of adjacent black dye nozzles.

17. The system of claim 14, wherein one row of light dye nozzles is arranged at a position directly between one row of dark dye nozzles and the one or more rows of black dye nozzles.

18. The system of claim 14 wherein the ink used during high-speed printing is stored in the supplies coupled to the dark dye nozzles and yellow dye nozzles.

19. The system of claim 18, wherein the ink used during low speed printing is stored in the supplies coupled to the light and dark dye nozzles and yellow dye nozzles, and wherein the light dye nozzles are not used during high speed printing.

20. A seven ink jet printing system, comprising:
a plurality of rows of dark dye nozzles, each row of dark dye nozzles coupled to a supply of ink and having a color selected from the group consisting of cyan and magenta;

a row of yellow dye nozzles;

one or more rows of adjacent black dye nozzles coupled to a supply of black ink; and

a plurality of rows of light dye nozzles, each row of light dye nozzles coupled to a supply of ink and having a color selected from cyan, magenta, yellow, and black;

wherein each of the rows of the yellow dye nozzle, dark dye nozzles, light dye nozzles, and black dye nozzles are arranged substantially parallel to each other, and wherein each row of nozzles adjacent to a row of dark dye nozzles or the one or more rows of black dye nozzles is a row of light dye nozzles.

204210 2629001

21. The system of claim 20, wherein a first row of light dye nozzles is coupled to a supply of ink having a light cyan color, a second row of light dye nozzles is coupled to a supply of ink having a light magenta color, and a third row of light dye nozzles is coupled to a supply of ink having a light yellow color.

22. The system of claim 20, wherein a first row of light dye nozzles is coupled to a supply of ink having a light cyan color, a second row of light dye nozzles is coupled to a supply of ink having a light magenta color, and a third row of light dye nozzles is coupled to a supply of ink having a light black color.

23. The system of claim 20, wherein one row of light dye nozzles is arranged at a position directly between one row of dark dye nozzles and the one or more rows of black dye nozzles.

24. The system of claim 20 wherein the ink used during high-speed printing is stored in the supplies coupled to the dark dye nozzles and yellow dye nozzles.

25. The system of claim 24, wherein the ink used during low speed printing is stored in the supplies coupled to the light and dark dye nozzles and yellow dye nozzles, and wherein the light dye nozzles are not used during high speed printing.

10056292-012402

26. An eight ink jet printing system, comprising:

a plurality of rows of dark dye nozzles, each row of dark dye nozzles coupled to a supply of ink and having a color selected from the group consisting of cyan, magenta, and yellow;

one or more rows of adjacent dark black dye nozzles coupled to a supply of black ink; and

a plurality of rows of light dye nozzles, each row of light dye nozzles coupled to a supply of ink and having a color selected from cyan, magenta, yellow, and black;

wherein each of the rows of the dark dye nozzles, light dye nozzles, and dark black dye nozzles are arranged substantially parallel to each other, and wherein each row of nozzles adjacent to a row of dark dye nozzles is a row of light dye nozzles.

27. A drop-on-demand printing system having a plurality of nozzle columns, comprising:

a plurality of columns of dark dye nozzles, each column of dark dye nozzles coupled to a source of dark dye ink;

a plurality of columns of light dye nozzles, each columns of light dye nozzles coupled to a source of light dye ink; and

one or more columns of adjacent dark black dye nozzles coupled to a source of black dye ink, the columns of black dye nozzles located at one end of the plurality of nozzle columns,

wherein each of the columns of dark dye nozzles and light dye nozzles are arranged substantially parallel to each other, and wherein at least one column of dark dye nozzles is separated from the next row of dark dye nozzles by a row of light dye nozzles.

28. The system of claim first 27, comprising at least three columns of dark dye nozzles, wherein each column of dark dye nozzles is coupled to a source of dark dye ink of a different color, the supplies of dark dye ink including the colors of cyan, magenta, and yellow.

10056292-012402

29. The system of claim 28, comprising at least two columns of light dye nozzles, wherein each column of light dye nozzles is coupled to a source of light dye ink of a different color, the supplies of light dye ink including the colors of light cyan and light magenta.

30. The system of claim 29, wherein each column of dark dye nozzles is separated from the next column of dark dye nozzles by a column of light dye nozzles.

31. The system of claim 30, wherein one column of light dye nozzles is located directly between one column of dark dye nozzles and the one or more columns of dark black dye nozzles.

32. The system of claim 31, wherein one column of yellow nozzles is located at the other end of the plurality of nozzle columns adjacent a column containing dark dye nozzles.

33. The system of claim 30 wherein one column of dark yellow nozzles is located directly between one column of light dye nozzles and the one or more column of dark black dye nozzles.

20140202 012402 10056292